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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/620,968

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Shunpei Yamazaki

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4214

22204

7590

05/05/2004

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EXAMINER

HA, NATHAN W

ART UNIT

PAPER NUMBER

2814

DATE MAILED: 05/05/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Applicati n N .

09/620,968

Applicant(s)

YAMAZAKI, SHUNPEI

Examiner

Nathan W. Ha

Art Unit

2814

-- The MAILING DATE of this communicati n appears on th cover sh et with the corresp ndence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 2/9/04.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 2-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 2/04.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 2-3, 5-6, 8-10, 12-13, 15-17, 19-20, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cunningham et al. (US 3,833,842, previously cited, hereinafter, Cunningham) and in view of Zhang (US 2003/0060027, newly cited) and Zhang et al. (US 6,607,947, newly cited, hereinafter, Zhang.)

In regard to claims 2, 9, 12, 16, and 19, in fig.12, Cunningham discloses a method of making a semiconductor device comprising steps of:

forming an insulating layer 119 comprising silicon nitride over a semiconductor substrate 70 by sputtering in an atmosphere consisting of nitrogen; see col. 12, lines 5-12. Cunningham does not expressly disclose that the amount of nitrogen is 75% volume or more.

Zhang discloses an analogous semiconductor device including the amorphous silicon layer 23 is crystallized in an atmosphere of more than 75% volume in order to improve the field effect mobility of the thin film transistor.

Therefore, it would have been obvious to one of ordinary skilled in the art at the time of the invention was made to use a high volume of Nitrogen as taught by Zhang in order to improve the field effect mobility of the thin film transistor.

In regard to claims 3, 6, 10, 13, 17, and 20, the above-mentioned references teach the layer is made by using RF sputtering. See [0074], for example.

In regard to claim 5, Zhang discloses the Argon has 25% volume or less. See col. 8, lines 47-50.

In regard to claims 9 and 12, Cunningham further discloses the use of Aluminum electrodes; see col. 2, lines 34-38.

In regard to claims 8, 15, and 22, Zhang, '947, further discloses that the halogen at 20% volume. See col. 8, lines 2-5.

3. Claims 4, 7, 11, 14, 18 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cunningham and Zhang's as applied to claims 2-3, 5-6, 8, 15-17, 19-20, and 22 above, and further in view of Nomoto et al. (US 5,225,364, hereinafter Nomoto.)

In regard to claims 4, 7, 11, 14, 18 and 21 Cunningham discloses all of the claimed limitations as mentioned above except expressly teaches the device can be used in a matrix display. It is noted that the device of Cunningham in fact can be used in a matrix display device since it is a metallization device. It is used to carry out signal or power connection. However, in order to show the obviousness of this utility, Nomoto is incorporated herein. Nomoto discloses an analogous semiconductor device with substrate 1, silicon nitride insulating layer 5 and an aluminum electrode 8. The matrix

has plurality devices that connect in rows and columns. Therefore, it is proper to combine this structure to a metallization structure in order to carry out the intended product, or design choice of a product.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to adapt matrix device as taught by Nomoto in Cunningham's in order to carry out the advantage mentioned above.

### ***Response to Arguments***

4. Applicant's arguments with respect to claims 2-22 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nathan W. Ha whose telephone number is (571) 272-1707. The examiner can normally be reached on M-TH 8:00-7:00(EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (571) 272-1705. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Nathan Ha



LONG PHAM  
PRIMARY EXAMINER